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SAMPLES

A Sampling of NOAA Research People and Projects

FALL 2000 | Office of Oceanic and Atmospheric Research | VOLUME 1 NUMBER 4

Congratulations to the NOAA Research Employees of the Year

Joseph L. Brown
National Sea Grant College Program

Lisa S. Darby
Environmental Technology Laboratory

James C. Hendee
Atlantic Oceanographic & Meteorological Laboratory

Daniel C. Law
Environmental Technology Laboratory

Jenny L. Martinez
Forecast Systems Laboratory

Stephen A. Montzka
Climate Monitoring & Diagnostics Laboratory

Mary Anne Whitcomb
Budget & External Affairs

President Honors PMEL Scientist

An early interest in fossils turned into a life's work in geosciences for Dr. Robert P. Dziak, one of the winners of the Presidential Early Career Award for Scientists and Engineers. Dziak, chief seismologist at NOAA's Pacific Marine Environmental Laboratory (PMEL) in Newport, Oregon, was one of 60 individuals who were awarded the nation's highest award for scientists who are just starting their careers. Dr. Shawn McLaughlin of NOAA's National Ocean Service was also honored.

"Dr. Dziak has contributed greatly to our understanding of deep ocean volcanic and thermal activity and the role they may play in the global ocean's physical, chemical and biological environment," said Dr. David L. Evans, NOAA Assistant Administrator. "We in NOAA Research are very proud that his work has been recognized with this prestigious honor."

A native of Illinois, Dziak holds an undergraduate degree from the University of Illinois and a master's from the University of Memphis. Three years ago, he earned his doctorate from Oregon State University, where he currently holds a joint appointment and is an assistant professor.

"There is no doubt that Dr. Dziak has a bright scientific career ahead of him," said Dr. Eddie N. Bernard, PMEL Director. "We are fortunate to have a scientist of Dr. Dziak's talent and insight. He sets his goals high and he has the intelligence and commitment to achieve them."

Dziak's research into how underwater earthquakes move along the seafloor and their effect on the colonies of microbes that live there has opened new windows into this previously little-known field.

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Thunder Bay Sanctuary

A NOAA Research ship, along with a remotely-operated underwater vehicle, taped video of shipwrecks as part of activities celebrating the dedication of the Thunder Bay National Marine Sanctuary and Underwater Preserve at Alpena, Michigan.

The 448-square mile Thunder Bay site will protect a collection of 116 historically significant shipwrecks. The site is unique in that it is the first sanctuary located entirely in fresh water and fully within state waters.

The Great Lakes Environmental Research Laboratory's (GLERL) research vessel *Shenehon* traveled to shipwreck sites collecting underwater video footage with a remotely-operated vehicle (ROV) owned and operated by NOAA's National Undersea Research Program (NURP) through the University of Wisconsin-Milwaukee.

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Turn on, Tune in to OGP Website

The Office of Global Programs (OGP) is now offering *streaming video* on its web site www.ogp.noaa.gov. Each tape, on a different subject, is run for a month, then archived for later viewing.

Streaming video is not new, and it's not perfect. But it's improving in leaps and bounds, allowing the OGP web site to successfully adopt this technology.

The essence of streaming video lies in the ability of digital video to be transmitted in "packets" – small parcels of information encoded for continuity. The end-use computer is able to store and play each of these packets in a seamless stream. It's almost like television, where the signals are transmitted and processed "on the fly." Streaming media (which includes video, audio, text, animations, and images) brings video to the desktop.

Learning About NOAA Research in Some Unexpected Places

What do a mountain, a cruise ship, and an airport have in common? They are all new places for the public to learn about NOAA Research.

A well-educated public in the sciences is essential if we are to address today's oceanic and atmospheric issues as well as those in the future. More people are becoming exposed to science via the Internet and television through the increasing number of cable channels and of course, public television. Often this will whet their appetite to learn more, and that's a good thing.

But there are some non-electronic places where people can learn about science in general and NOAA Research in particular.

Travelers using Terminal D of the Baltimore-Washington International Airport can linger for a while to learn what NOAA and Maryland Sea Grant are doing to help the Chesapeake Bay. This display (see photo below, right) was erected in October and will remain for up to one year and could be the first of many in other airports in states where there are NOAA Research programs.

This summer, I went to New Hampshire's Mount Washington to help open the Mount Washington Observatory Weather Discovery Center. A result of a cooperative agreement between Mount Washington and NOAA's Forecast Systems Laboratory in Boulder, the Center offers a lot of neat information and hands-on activities to help visitors learn more about weather and atmospheric science. So, in addition to being on the highest peak in the northeastern U.S., visitors also take home a better understanding of weather and how it works.

What better place to learn about how the ocean and the atmosphere interact than at sea? And that's just where you'll find two of the newest oceanic and atmospheric labs – on board the Royal Caribbean cruise ship "Explorer of the Seas". Working in partnership with NOAA's Atlantic Oceanographic and Meteorological Laboratory and the University of Miami's Rosenteil School of Marine and Atmospheric Science, the ship now sports two well-equipped labs – the atmospheric lab on the 13th deck and the oceans lab 12 levels below – where scientists can conduct research while sharing their work with the passengers via daily lectures and tours.

In a main passenger area there are two large kiosks - one for oceans and one for the atmosphere - with hands-on displays, video presentations, and readouts of the data being collected by the laboratory instruments.

One of the partners said "This partnership of cruising and science is an exciting and wonderful approach to modern science."

I agree. Anytime we can help the public better understand the work we do and how it benefits the Nation, the better it is for us all.

California and Climate: NOAA's JIMO Leads Joint Study

California is first in line for some of the wettest, wildest weather that rides out of the Pacific Ocean, spurred on by the El Niño-Southern Oscillation and the Pacific Decadal Oscillation. And as the state with the nation's highest population and largest economy, California has a lot at stake when rough weather storms ashore. The state's diverse physical landscapes and biological systems can be affected by such climate variability in striking ways.

To study the impacts of climate variability and improve extended weather forecasts for California, climate scientists at NOAA's Joint Institute for Marine Observations (JIMO), located at the Scripps Institution of Oceanography in La Jolla, California, have organized the California Applications Program (CAP).

To improve forecasts of storms born in the Pacific, the CAP seeks to evaluate weather and climate forecasts for California; improve local models and forecasts of water resources and fire risks; and tailor and disseminate forecasts to local users. Their approach is to work directly with users – such as water resources managers and fire prevention and forests management – in order to evaluate forecasts from the user perspective, and to improve their usefulness and develop new forecast application strategies.

Funded through NOAA's Office of Global Programs, CAP brings together university, federal, and private agency scientists. CAP is led by JIMO research meteorologist Dr. Dan Cayan. For more information go to the web site created under the auspices of the University of California at San Diego go to: meteora.ucsd.edu/cap/.

JIMO brings together state-of-the-art observation capabilities and systems architecture of both NOAA and Scripps. For additional information about JIMO, contact Interim Director Bill Kuperman (wkuperman@ucsd.edu) or JIMO Administrator Pat Jordan (pjordan@ucsd.edu).

The Maryland Sea Grant exhibit at Baltimore Washington International Airport opened on October 13. The exhibit, which displays Maryland Sea Grant programs, will be at the entrance of Terminal D for one year.

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Presidential Honors

"Submarine volcanic eruptions provide windows into the biosphere and Dr. Dziak's research helps his NOAA colleagues, and collaborating scientists all over the world, know where and when those windows open," said Dr. Stephen Hammond, leader of PMEL's Ocean Environmental Research Division, where Dziak works.

Hammond added that Dziak is particularly skilled at recognizing the elusive, but specific, sounds that submarine volcanoes emit during eruption. By using both the U.S. Navy and NOAA's deep water hydrophone listening systems, Dziak and his colleagues can find the location of the eruption and measure its chemical, physical, and biological consequences.

Although submarine eruptions are the most common such events on Earth, the NOAA acoustics team, of which Dziak is a key member, made it possible to study their impacts on the ocean for the first time ever in the summer of 1993, Hammond noted.

Dziak's ultimate goal is to study the recent underwater activity along the Pacific coast and see what relationship it may have to the likelihood of major earthquakes in northern California and southern Oregon.

NOAA Research Appropriation Status

As this issue goes to press in mid-November, NOAA Research does not yet have a full year appropriation. We received a conference mark of $323.2 million in October and are funded on a continuing resolution until December 5. It is uncertain as to when we will receive a full year appropriation. For an update on the status of our appropriation please check our web page, www.oar.noaa.gov.

OAR People

Congratulations to the following recipients of the Department of Commerce Bronze Medal Award!

Jeffrey S. Whitaker - CDC - For personal and professional excellence in providing continuity of service in the aftermath of the National Weather Service supercomputer fire.

Sandra J. Craig - OGP - For contributions to NOAA'S scientific/research programs through exceptional administration of financial transactions.

John A. Augustine - ARL/SRRB - For contributions in the field of Climate and Weather Forecasting Observing Systems.

Tim Crawford, **Jerry Crescenti**, and **Jeff French** - ARL - Air-Sea Research Team - For the design and application of a novel airborne instrument system to advance scientific knowledge of air-sea exchange.

James L. Buizer - OGP - Nominated as part of a group by the National Weather Service for forecasts in support of disaster relief in Mozambique.

Jeff McQueen - ARL - Nominated as part of a group by the National Ocean Service for advancing the production and delivery of newcasts and short-term forecasts of coastal atmospheric and oceanographic information for the Chesapeake.

Stanley Goldenberg and **Christopher Landsea** - AOML-Nominated by the National Weather Service as part of a group for issuing the accurate and first official physically based Atlantic Hurricane Outlooks for the 1998/1999 seasons, based upon new research.

Julie Scanlon - OAR HQ - Nominated as part of a group by the Office of the Under Secretary, NOAA, for efforts in the successful planning and execution of the 1999 Honor Awards Ceremony.

Scientists Find "Sea Snow," Storms

Scientists who participated on dives into the Gulf of Mexico could have sung "Stormy Weather" to describe some of their findings. During a cruise using the *Alvin* submersible vehicle in October, scientists encountered an "abyssal storm," a powerful current believed to gouge out trenches in the sea floor. They also encountered "sea snow," fluffy particles of organic debris.

The cruise, one of three identified by President Clinton this summer as targets for ocean exploration, was sponsored by a number of agencies, including NOAA's National Undersea Research Program.

Andrew Shepard, expedition coordinator and associate director of the National Undersea Research Center at the University of North Carolina-Wilmington, kept a daily on-line journal describing the marine life and events encountered during the cruise.

Using a new digital camera system, scientists saw an amazing array of marine life, including a blue octopus, a deep-sea squid with 10-foot-long tentacles, unidentified microbes, tubeworms, and coral. The scientists also visited sites that had been previously unexplored and found large deposits of gas hydrates - methane molecules trapped inside a cage of frozen water.

The first-hand encounter with the abyssal storms provided much useful information, said the researchers. Engineers working on underwater gas and oil production facilities need to consider these storms when they design and construct such projects.

"We were very pleased to confirm that these currents do exist, and then begin to collect hard data on how high they extend and how strong they are," said Dr. Ian MacDonald, the chief scientist of the cruise. Dr. MacDonald is from Texas A&M University.

Samples Puzzle

Four NOAA Research accomplishments are listed below. The acronyms of the labs or programs responsible for them are also listed, but not in the right order. Can you match each lab or program (1-4) with its particular accomplishment (a-d)? The words that make up the full name of the lab or program can be found in the text of their corresponding accomplishment.

You may recognize your own lab, joint institute, or program, but did you know.....

a. On the trip back after an explosion in their spacecraft on the way to the moon, the crew of Apollo 13 had to navigate through the dangerous space environment of radiation belts around Earth. This center provided critical guidance to this wayward vessel.

b. This laboratory has made scientific contributions that go to the very core of the issue of stratospheric ozone depletion. A world leader in aeronomy, it developed a theoretical explanation for the occurrence of the ozone hole over Antarctica and later gathered the observational evidence that proved that theory to be correct.

c. This cooperative institute helped develop the Warning Decision Support System. During 4 years of studies this system dramatically helped forecasters produce more timely and reliable mesoscale meteorological warnings. The average lead time for tornado warnings increased from 9 to 17 minutes.

d. Scientists received a grant from this national college program to develop a sterile oyster that can be grown year-round at sea. Unlike ordinary oysters, the sexless specimens do not become runny or chalky during the reproductive season, but remain plump and sweet. Today, about 80-90% of all jarred oysters produced are sterile.

1. AL
2. CIMMS
3. NSGCP
4. SEC

Please submit your final answer by January 3, 2001 to samplespuzzle@hq.oar.noaa.gov. A winner will be randomly chosen from the correct entries and receive a NOAA mug. Congratulations to Lt. Alan Hilton at SEC in Boulder, CO for winning the Samples Summer 2000 puzzle.

Thunder Bay

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Thanks to good underwater visibility, the ROV captured clear, detailed images of wreck debris which remains well-preserved in Lake Huron's cold, non-corrosive waters. Images of steam engine pistons, ships' propellers, rudders and steering gear were easily seen and greeted with curiosity and excitement, when the footage was shown to officials and the public following the Sanctuary dedication ceremony.

GLERL Director Steve Brandt thanked the National Marine Sanctuary Program "for the opportunity to be part of this historic event. It was a privilege to be able to team up with NURP and the University of Wisconsin-Milwaukee in bringing a glimpse of these vast cultural resources to the public," he said.

"We look forward to such opportunities in the future to use our science to enhance knowledge and education about these valuable artifacts."

Giant Jellyfish Invasion

Giant "jellies" – up to two feet in diameter – took up residence in the northern Gulf of Mexico this summer, causing swimmers and fishermen to do a double take when they first spied them.

Photo Credit: Monty Graham, Dauphin Island Sea Lab

Known as the "Spotted Jellyfish," these creatures don't threaten swimmers because their sting is mild compared to native jellyfish like the Sea Nettle. But the jellies' threat to the area's ecosystems is yet to be determined. Similar alien jellyfish have caused major disruptions in marine fisheries in Europe – in some cases driving out other marine life.

"One of the biggest worries is that these jellies feed directly on the eggs and larvae of the area's fish, shrimp and crabs. And doing so could have a serious effect on the commercial fisheries on the coast," says Dr. Monty Graham, senior marine scientist and Mississippi-Alabama Sea Grant-funded researcher at the Dauphin Island Sea Lab in Alabama. Gulf of Mexico shrimp are the nation's second most valuable fishery, trailing only Alaska salmon.

Native to Australian coastal waters, Spotted Jellyfish (*Phyllorhiza punctata*) have been migrating to the Caribbean for the past two decades, but have not been seen this far north. Their coastal invasion began in early June when it is believed the jellies, caught in the "Loop Current" that circulates through the Gulf, broke off the Loop into an eddy south of Alabama and the Florida panhandle. Satellite imagery from the Naval Research Laboratory at the Stennis Space Center confirms this.

By the end of September, the millions of spotted jellyfish that had swarmed across the Mississippi Sound from Mobile to New Orleans had gone through a full life cycle and had died off - leaving behind many questions. The biggest uncertainty is whether the invading jellyfish's offspring will live through the winter months and return in the spring to wreak havoc on the shrimp season when it opens in late spring.

In response to this invasion, the Mississippi-Alabama Sea Grant Consortium is providing $10,000 in emergency research funding to learn more about these invaders and their potential threat. Graham and Dr. Harriet Perry, Director of the Center for Fisheries Research & Development at the Gulf Coast Research Lab in Ocean Springs, Mississippi, are heading up the research team.

In the meantime, a new species of jellyfish has moved into the Gulf. This newcomer can grow to three feet in diameter and weigh up to 60 pounds. Unlike the Spotted Jellyfish, this new species does have a painful sting, and its tentacles can stretch out as far as 80 feet.

Send Us a Sample ....

Let us know what you think about this newsletter. What's missing? What do you like? What don't you like. Send comments to Jana Goldman or Karen Tolson. ***janag@hq.oar.noaa.gov or karent@hq.oar.noaa.gov***